What is High Content Screening (HCS)?
High Content Screening (HCS), also known as High Content Analysis (HCA), image cytometry, quantitative cell analysis or automated cell analysis, is an automated method that is used to identify substances that alter the phenotype of a cell in a desired manner. This technology is primarily used in biological research and drug discovery and combines fluorescent microscopy, automated cell calculations and phenotyping using image processing algorithms and informatics tools for the user to make decisions about a treatment.

<table>
<thead>
<tr>
<th>ASSAY FORMAT</th>
<th>DETECTION MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Content Analysis</td>
<td>Multi Spectral Imaging and Screening</td>
</tr>
<tr>
<td>Flow Cytometry</td>
<td>Multi Laser PMT</td>
</tr>
<tr>
<td>Geneblazer™ Technology</td>
<td>Ratio Fluorimetric</td>
</tr>
<tr>
<td>Luciferase</td>
<td>Bioluminescence</td>
</tr>
<tr>
<td>SPA</td>
<td>Radiometric</td>
</tr>
<tr>
<td>RIA</td>
<td>Radiometric</td>
</tr>
<tr>
<td>ELISA</td>
<td>Colorimetric/Fluorimetric</td>
</tr>
<tr>
<td>Substrate Conversion</td>
<td>Colorimetric/Fluorimetric</td>
</tr>
</tbody>
</table>


How Does HCS Compare to Other Cell-Based Assays?
Using a combination of established technologies, HCS can address both cellular level intensity and morphological measurements. With sufficient resolution for subcellular detection, automated detection and phenotyping can be achieved with intact, fixed or live cells. The table above describes some common cell-based assays used in laboratories.
The Inventors and Leaders in HCA

The Thermo Scientific™ Cellular Imaging and Analysis product line (formerly Cellomics) offers a full complement of hardware, analysis and control software, and informatics database tools to fully implement a high content program in your laboratory. With powerful software analysis and scalable informatics software, you can address hundreds of different biological phenotypes to discover more about a cell and its function.
Reliably Scale
your Throughput

CellInsight CX5 HCS Platform
Small in size but massive in its power, the Thermo Scientific™ CellInsight™ CX5 High Content Screening (HCS) Platform brings automated quantitative cell analysis to every cell biology or screening lab. Transform your cell-based research using the CellInsight CX5 HCS Platform by analyzing single cells in up to five fluorescent colors.

With proprietary autofocus and integrated plate scanning intelligence methods, the CellInsight CX5 HCS Platform brings speed and accuracy to investigate cell populations and phenotypes without sacrificing sensitivity and resolution.

Visit our website at thermoscientific.com/highcontent
See More in Less Images

The cutting-edge X1 camera is the most powerful HCS imaging tool to boost quantitative performance. See more of your biology in less images with the enlarged 2208 x 2208 pixel array. By ensuring reliability and reproducibility, the X1 camera’s CCD technology affords you the confidence to trust your data.

Brightfield Capabilities

Designed to work with or without fluorescent labeling, the CellInsight CX5 HCS Platform provides transmitted light, allowing you to explore more cell biology without the restriction of fluorescent dyes.

Scalable Cell Biology

The CellInsight CX5 HCS Platform addresses the problem of scale with a continuum of solutions depending on the need, compatible with slides all the way through 1536-well microplates. The CellInsight CX5 HCS Platform connects directly to the Thermo Scientific™ Orbitor™ RS Microplate Mover to add up to 80-plate processing capacity. With included Application Programming Interface’s (API), the CellInsight CX5 HCS Platform can be integrated into any third-party automation platform.
The HCS Studio Advantage

Image Analysis that Makes Sense
The Thermo Scientific™ HCS Studio™ Cell Analysis Software offers simple workflows to help you develop and optimize an assay without functionality loss. With simple and straightforward task-oriented approaches to image algorithm development, new users are immediately productive. When a more complex assay is designed, HCS Studio Cell Analysis Software scales seamlessly, providing a host of algorithmic, visualization and online help tools that reduce the complexity and time investment of developing assays.

From Optimized Assay Settings – Users of HCS Studio Cell Analysis Software start with more than 30 pre-established assays that can be optimized to cell-line and particular phenotype. Driven by intuitive icons, you can simply choose the assay and magnification of the optimized protocol, confirm settings, and begin the scan. We’ve done the work, so you don’t have to.

Build Your Own Assay – Create your own assay from scratch using the flexible tools and design of HCS Studio Cell Analysis Software. With instant feedback you can control hundreds of options including:

- Background Correction
- Object Segmentation
- Spot/Granular Detection
- Region of Interests
- Sensitivity of Detection
- Projected Image Format
- Contrast of Images
- Phenotypic Gating

Visit our website at thermostcientific.com/highcontent
Population Characterization – Getting More From HCA

Your assay deserves more. Whether using well-level measurements for total population responses or single-cell measurement for screening, HCS Studio Cell Analysis Software and its visualization tools allow you to investigate responses from the hundreds of measurements made.

You can then combine single-cell phenotypic measurements and generate “Events” that can describe a subpopulation of cells using the multiplexed capability of HCA. The tremendous power of high content and Thermo Scientific™ High Content Tools allow you to quickly and accurately build phenotypic experiments in a single automated run.

To order or request additional information, call USA 1.800.432.4091 • Asia +81 3 5826 1659 • Europe +32 (0)53 85 71 84